

WE CLAIM:

1. A vibration isolation mount for a motor vehicle with a body and a subframe, the body having an aperture, the subframe having a through hole, said isolation mount comprising:

a foamed elastomeric annular upper isolation member between the body and the subframe;

an annular insert member disposed in said annular upper isolation member and extending axially therefrom, said insert member having an elliptical inner axial passageway;

an elliptical isolation member extending from said upper isolation member and contiguous to said elliptical inner axial passageway of said annular insert member, said elliptical isolation member having a cross-sectional area and a passageway, said cross-sectional area having a major axis and a minor axis, said major axis providing attenuation for lateral vibration and said minor axis providing attenuation for fore and aft vibration;

an elliptical retainer member disposed in said passageway, said retainer member having a bore; and

a foamed elastomeric annular lower isolation member being mounted to the subframe opposite said annular upper isolation member, said annular lower isolation member and said annular upper isolation member providing attenuation for vertical vibration.

2. A vibration isolation mount as claimed in Claim 1 wherein said elliptical isolation member further having a tubular lateral surface area and a tubular fore and aft surface area, said tubular lateral surface area is twice said tubular fore and aft surface area.

3. A vibration isolation mount as claimed in Claim 1 wherein said foamed elastomeric material is microcellular polyurethane.

4. A vibration isolation mount as claimed in Claim 1 wherein said foamed elastomeric material is selected from the group consisting of fluorocarbon, highly saturated nitrile, methyl acrylate polymer, silicone, EPDM, and Neoprene® and thermoplastic elastomer.

5. A vibration isolation mount as claimed in Claim 1 further comprising:  
a threaded fastener disposed through the aperture, through said bore in said elliptical retainer member, through the hole in the subframe and through said annular lower isolation member; and  
a threaded nut engaging said threaded fastener.

6. A vibration isolation mount as claimed in Claim 2 wherein said lateral attenuation is less than the fore and aft attenuation.

7. A vibration isolation mount as claimed in Claim 3 wherein said microcellular polyurethane having a density varying from 0.3 to 0.8 grams per cubic centimeter.

8. A vibration isolation mount as claimed in Claim 5 wherein said threaded nut being engaged to said threaded fastener to place compressive axial load on said upper isolation member and said lower isolation member.

9. A vibration isolation mount as claimed in Claim 8 wherein said compressive axial load affecting the vertical attenuation.

10. A vibration isolation mount as claimed in Claim 9 wherein said compressive axial load affecting the lateral and fore and aft attenuation.

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11. An isolation mount for use in motor vehicles with a body and a subframe, the subframe having a through hole, said isolation mount comprising:

a foamed elastomeric upper isolation member having an annular top portion and an arcuate annular portion extending axially from said top portion, said arcuate annular portion having a cross section and an inner arcuate axial passage, said inner axial passage having an arcuate passageway;

an annular insert member disposed axially in said top portion, said insert member having an arcuate inner axial surface contiguous to said arcuate annular portion of said upper isolation member;

a retainer member disposed in said inner axial passageway, said retainer member having a bore; and

a foamed elastomeric lower isolation member adjacent to said retainer member;

whereby said upper isolation member and said lower isolation member attenuating vertical vibration forces and said arcuate annular portion and said arcuate retainer member attenuating lateral vibration forces and fore and aft vibration forces.

12. An isolation mount as claimed in Claim 11 wherein said arcuate inner axial surface is elliptical in cross-sectional area.

13. An isolation mount as claimed in Claim 11 wherein said arcuate inner axial surface is parabolic in cross-sectional area.

14. An isolation mount as claimed in Claim 11 wherein said arcuate inner axial surface is oval in cross-sectional area.

15. An isolation mount as claimed in Claim 11 wherein said foamed elastomeric upper isolation member is a microcellular polyurethane.

16. An isolation mount as claimed in Claim 11 wherein said foamed elastomeric upper isolation member is a material selected from the group of fluorocarbon, highly saturated nitrile, EPDM, silicone, methyl acrylate acid and Neoprene® polymer.

17. An isolation mount as claimed in Claim 14 wherein said arcuate inner axial surface has a major diameter and a minor diameter, the ratio of said major diameter divided by said minor diameter varies between 1.05 to 4.0.

18. An isolation mount as claimed in Claim 11 wherein said inner axial surface forming a compressive radial load on said arcuate annular portion to affect the lateral isolation response of said mount.

19. An isolation mount as claimed in Claim 11 further comprising a threaded member disposed in said inner axial passageway, said threaded member being engaged by a threaded nut to form a compressive axial load on said upper member and said lower member to affect the vertical isolation response of said mount.

20. An isolation mount as claimed in Claim 11 wherein said foamed elastomeric upper isolation member is a material selected from the group of fluorocarbon, highly saturated nitrile, EPDM, silicone, methyl acrylate polymer and Neoprene® polymer.

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